

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
13 January 2005 (13.01.2005)

PCT

(10) International Publication Number
WO 2005/002370 A2

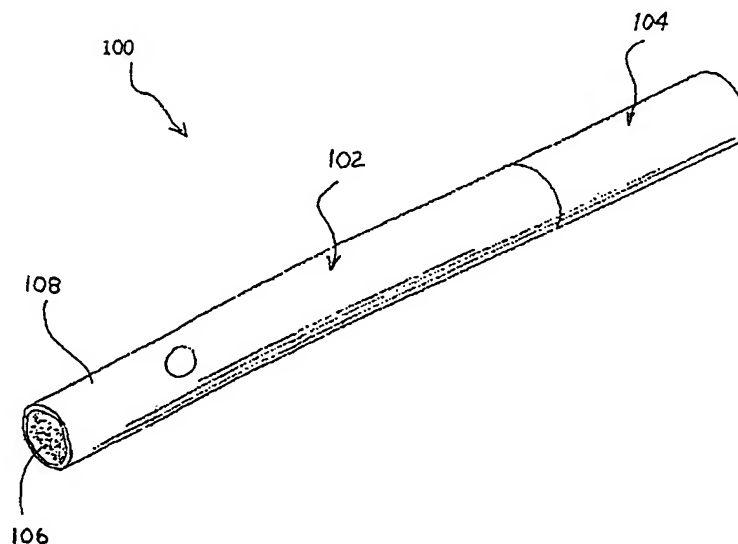
- (51) International Patent Classification⁷: **A24D**
- (21) International Application Number:
PCT/US2004/018854
- (22) International Filing Date: 14 June 2004 (14.06.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/477,922 13 June 2003 (13.06.2003) US
- (71) Applicant (for all designated States except US): **PHILIP MORRIS USA INC.** [US/US]; 6601 West Broad Street, Richmond, VA 23230 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **LI, Ping** [US/US]; 9101 Cloisters East, Richmond, VA 23234 (US). **GEDEVANISHVILI, Shalva** [GE/US]; 7303 Durwood Crescent, Richmond, VA 23229 (US). **RASOULI, Firooz** [US/US]; 1807 Gildenborough Court, Midlothian, VA 23113 (US). **ZHANG, Weijun** [CN/US]; 2537 Lochness Road, Richmond, VA 23235 (US). **GARG, Rajesh, K.** [US/US];

3216 Center Ridge Drive, Richmond, VA 23233 (US). **ALONSO, Hector** [US/US]; 2340 Stuts Lane, Richmond, VA 23236 (US).

- (74) Agent: **SKIFF, Peter, K.**; Burns, Doane, Swecker & Mathis, LLP, P.O. Box 1404, Alexandria, VA 22313-1404 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,

[Continued on next page]

(54) Title: CIGARETTE WRAPPER WITH PRINTED CATALYST



(57) Abstract: A wrapper for a smoking article includes a web; and a patterned deposit on at least a portion of one surface of the wrapper, wherein the patterned deposit comprises catalyst particles. The patterned deposit can include a nanoparticle catalyst that is capable of catalyzing the conversion of a constituent gas component in the mainstream and/or sidestream smoke of the smoking article. The constituent gas component can be carbon monoxide and/or nitric oxide and the catalyst particles can be iron oxide. Also provided is a smoking article comprising a tobacco rod having a wrapper formed around the tobacco rod, the wrapper including a patterned deposit on at least a portion of one surface of the wrapper. A method of making the wrapper and a method of making a smoking article utilizing the wrapper are also provided.



FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

- *without international search report and to be republished upon receipt of that report*

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
13 January 2005 (13.01.2005)

PCT

(10) International Publication Number
WO 2005/002370 A3

(51) International Patent Classification⁷: **D21H 25/00**

(21) International Application Number:
PCT/US2004/018854

(22) International Filing Date: 14 June 2004 (14.06.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/477,922 13 June 2003 (13.06.2003) US

(71) Applicant (for all designated States except US): **PHILIP MORRIS USA INC.** [US/US]; 6601 West Broad Street, Richmond, VA 23230 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **LI, Ping** [US/US]; 9101 Cloisters East, Richmond, VA 23234 (US). **GEDEVANISHVILI, Shalva** [GE/US]; 7303 Durwood Crescent, Richmond, VA 23229 (US). **RASOULI, Firooz** [US/US]; 1807 Gildenborough Court, Midlothian, VA 23113 (US). **ZHANG, Weijun** [CN/US]; 2537 Lochness Road, Richmond, VA 23235 (US). **GARG, Rajesh, K.** [US/US]; 3216 Center Ridge Drive, Richmond, VA 23233 (US). **ALONSO, Hector** [US/US]; 2340 Stuts Lane, Richmond, VA 23236 (US).

(74) Agent: **SKIFF, Peter, K.**; Burns, Doane, Swecker & Mathis, LLP, P.O. Box 1404, Alexandria, VA 22313-1404 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

(88) Date of publication of the international search report:
31 March 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: CIGARETTE WRAPPER WITH PRINTED CATALYST

(57) Abstract: A wrapper for a smoking article includes a web; and a patterned deposit on at least a portion of one surface of the wrapper, wherein the patterned deposit comprises catalyst particles. The patterned deposit can include a nanoparticle catalyst that is capable of catalyzing the conversion of a constituent gas component in the mainstream and/or sidestream smoke of the smoking article. The constituent gas component can be carbon monoxide and/or nitric oxide and the catalyst particles can be iron oxide. Also provided is a smoking article comprising a tobacco rod having a wrapper formed around the tobacco rod, the wrapper including a patterned deposit on at least a portion of one surface of the wrapper. A method of making the wrapper and a method of making a smoking article utilizing the wrapper are also provided.

WO 2005/002370 A3